

Taxonomic Notes of Tribe Phycitini (Lepidoptera, Pyralidae, Phycitinae) from Korea (IV)

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Abstract Six species of Phycitini, *Salebria vinacea* (Inoue), *Apomyelois fasciatella* Inoue, *Oligochroa bitinctella* (Wileman), *O. bilineatella* (Inoue), *Metriostola betulae* (Goeze), and *Psorosa decolorella* Yamanaka, are recorded for the first time from Korea, with illustrations of adults and genitalia of both sexes. Among them, female of four species, *S. vinacea* (Inoue), *A. fasciatella* Inoue, *O. bitinctella* (Wileman), and *O. bilineatella* (Inoue) are described for the first time.

Key words Lepidoptera, Pyralidae, Phycitinae, Phycitini, taxonomy, Korea

INTRODUCTION

Tribe Phycitini is the largest group, comprising over 2/3 of all known genus of subfamily Phycitinae, which has been known over 500 species in the Palaearctic region. The systematic position of tribe Phycitini has been confused because previous researchers had significantly different opinions in grouping of the tribes. In the present study, the authors followed Agenjo (1958) and Roesler (1973) for the systematics of the tribe Phycitini. Since Leech (1901) recorded three species of the tribe Phycitini from Korea, a total of 65 Phycitinae species known in the Korean peninsula. In this 4th part of the revisional studies of Korean tribe Phycitini (Choi, Paek & Bae, 1998, 1999; Paek, Choi & Bae, 1999) additional six species are newly recognized: *Salebria vinacea* (Inoue), *Apomyelois fasciatella* Inoue, *Oligochroa bitinctella* (Wileman), *O. bilineatella* (Inoue), *Metriostola betulae* (Goeze), and *Psorosa decolorella* Yamanaka. Among them, three genera, *Apomyelois* Heinrich, *Oligochroa* Ragonot, and *Metriostola* Ragonot are recorded for the first time from Korea.

The females of four species, *S. vinacea* (Inoue), *A. fasciatella* Inoue, *O. bitinctella* (Wileman), and *O. bilineatella* (Inoue) are described for the first time, with illustrations of their genitalia.

Abbreviations for depositories of the materials examined used in this study are as follows: UIB- Department of Biology, University of Incheon, Incheon; CIS- Center for Insect Systematics, Kangwon National University, Chuncheon; NIAST- National Institute of Agricultural Science and Technology, Suwon; NAK- Forest Museum, National Arboretum, Korea Forest Administration, Pocheon; TL- Type locality. Abbreviations for the provincial names are as follows: GW- Gangwon; GG- Gyeonggi; CB-

Chungbug; GB- Gyungbug; GN- Gyungnam; JN- Jeonnam.

***Salebria vinacea* (Inoue) 큰알락명나방 (新稱)**

(Figs 1, 7, 13, 18)

Nephopteryx vinacea Inoue, 1959, Tinea 5: 296, fig. 5. TL: Japan.

Salebria vinacea: Inoue, 1982, 1: 393, 2: 250, pl. 47, figs 38, 39.

Diagnosis. Wingspan, 25–29 mm. This species can be easily separated from *S. morosalopsidis* Roesler, by the whitish costal area with two dark grayish-brown spots and the dentated antemedian line on the forewing.

Adults (Fig. 1). Antenna of male broadened at base of flagellum, with large scales; labial palpus stout, strongly upturned, dark grayish-brown; basal segment covered with pale grayish-white scales. Ground color of forewing dark grayish brown; basal areas of costa and dorsum partially suffused with reddish-brown scales; submarginal line pale grayish brown, slightly bent.

Male genitalia (Figs 7, 13). Uncus subtriangular, roundly protruded at apex, dorsally covered with short hairs; gnathos arrowhead-shaped. Valva sock-shaped, slightly convex; basal half of costa well sclerotized; harpe semicircle, with minute short hairs; sacculus well sclerotized. Vinculum sclerotized, large, slightly shorter than of valva. Aedeagus broad, as long as valva; cornutus horn-like, short, strongly sclerotized. Structure of 8th abdomen shown in fig. 13.

Female genitalia (Fig. 18). Apophysis anterioris long, 1.3 times as long as apophysis posterioris. Ostium bursae large, simple, cylindrical, strongly sclerotized. Ductus bursae membranous, broad. Ductus seminalis strongly sclerotized, wire-like, originating from ambiguous lobe of corpus bursae near junction corpus bursae. Corpus bursae ovate, wrinkled, covered with small spines near basal part of ductus seminalis; signum rudimentary.

Material examined. GB- 3 ♂, 1 ♀, Mt. Sobaek, Youngpung-gun, 17. VII. 1998 (Paek, Lee & Song), UIB, gen. sl. no. UIB-1904 (♂), 3 ♀, same locality, 20. VII. 1985 (Y.S. Bae), UIB, gen. sl. no. UIB-1800. GN- 1 ♀, Mt. Chiri, Sancheong-gun, 29. VII. 1997 (S.B. Ahn), NIAST. JN- 2 ♀, Mt. Jangan, Namweon-shi, 21. VII. 1998 (Bae, Paek & Lee), UIB.

Distribution. Korea (GB, GN, JN) and Japan.

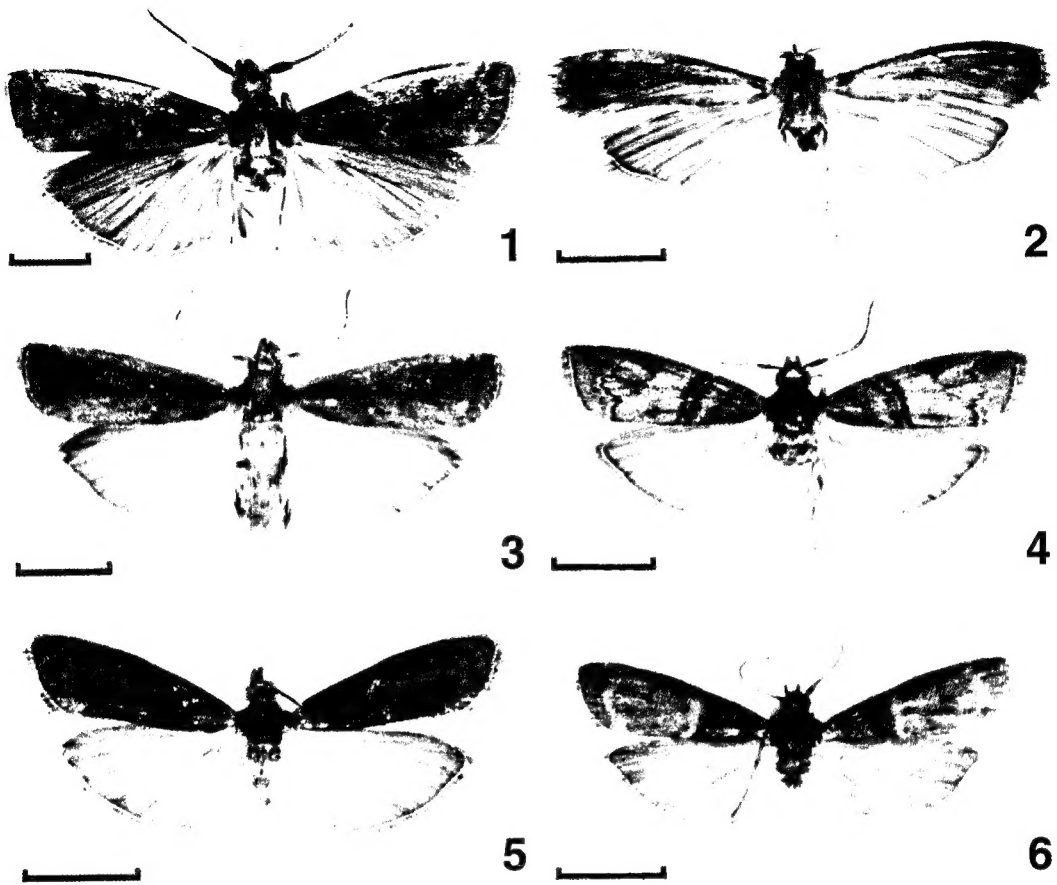
Host plant. Unknown.

Remarks. This species was originally described, based on the male from Japan by Inoue (1959). It was originally placed in the genus *Nephopteryx* Hübner, but it was transferred to the genus *Salebria* Zeller by Inoue (1982). The female, hitherto unknown, is described and figured for the first time. Moths were collected from the mid to the late of July.

***Apomyelois fasciatella* Inoue 붉은맥알락명나방 (新稱)**

(Figs 2, 8, 19)

Apomyelois fasciatella Inoue, 1982, Moths of Japan, 1: 393, 2: 250, pl. 47, fig. 44. TL: Japan.



Figs 1-6. Phycitini spp., adults: 1. *Salebria vinacea* (Inoue), ♂; 2. *Apomyelois fasciatella* Inoue, ♀; 3. *Oligochroa bitinctella* (Wileman), ♂; 4. *O. bilineatella* (Inoue), ♂; 5. *Metriostola betulae* (Goeze), ♂; 6. *Psorosa decolorella* Yamanaka ♂. (Scales: 5.0 mm)

Diagnosis. Wingspan, 21–25 mm. This species can be separated from *A. striatella* Inoue, by the more than one whitish scales suffused with costal and dorsum areas, and which without black lines on veins.

Adults (Fig. 2). Antenna filiform of both sexes shortly ciliated, pale whitish on upper surface. Labial palpus upturned, grayish-brown. Ground color of forewing dark grayish brown; purplish red scales suffused M_1 to CuA_2 . Hindwing yellowish gray.

Male genitalia (Fig. 8). Uncus semicircular, dorsally covered with moderate hairs; apical process of gnathos ambiguous-shaped, blunt at apex; transtilla concave on distal margin, with developed arms; juxta nearly U-shaped. Valva broad, rounded at apex; costa weakly sclerotized; sacculus developed. Vinculum weakly sclerotized, broad, short, slightly longer than $1/2$ of valva length. Aedeagus narrow, short, 0.7 times as long as valva.

Female genitalia (Fig. 19). Apophysis posterioris short, about $1/2$ length of apophysis anterioris. Ostium bursae small, cup-shaped, anteriorly narrow. Ductus bursae long and narrow, membranous,

about 4 times of apophysis anterioris in length. Ductus seminalis membranous, originating from posterior part of corpus bursae. Corpus bursae ovate, membranous; signa two, large, ovate, densely scobinated.

Material examined. GW- 1 ♂, Kangwon, N. Univ. 5. VI. 1992 (K.T. Park), CIS, gen. sl. no. UIB-1907. GG- 1 ♀, Is. Daebu, Ansan-shi, 28. VI. 1997 (M.K. Paek), UIB, gen. sl. no. UIB-1676. CB- 1 ♂, Mt. Gaya, 15. VI. 1997 (Bae *et al.*), UIB, gen. sl. no. UIB-1677.

Distribution. Korea (GW, GG, CB) and Japan.

Host plant. Unknown.

Remarks. This species was originally described based on a males from Japan by Inoue (1982). The female, hitherto unknown, is described and figured for the first time. It is one of the rare species in Korea. Moths were collected from the early to the late of June. The genus *Apomyelois* Heinrich, 1956 (Type species: *Dioryctria bistriatella* Hulst, 1887) is known for the first time from Korea. The genus is morphologically similar to *Myelois* Hübner, [1825] 1816, but it can be distinguished by the forewing with R_3 and R_4 stalked for about 2/3 of its length, and basally connected with R_2 .

***Oligochroa bitinctella* (Wileman, 1911) 작은네점알락명나방 (新稱)**

(Figs 3, 9, 14, 20)

Nephopteryx bitinctella Wileman, 1911, Trans. ent. Soc. Lond. 1911: 359. TL: Japan.

Oligochroa bitinctella: Inoue, 1982, 1: 395, 2: 251, pl. 47, figs 53, 54.

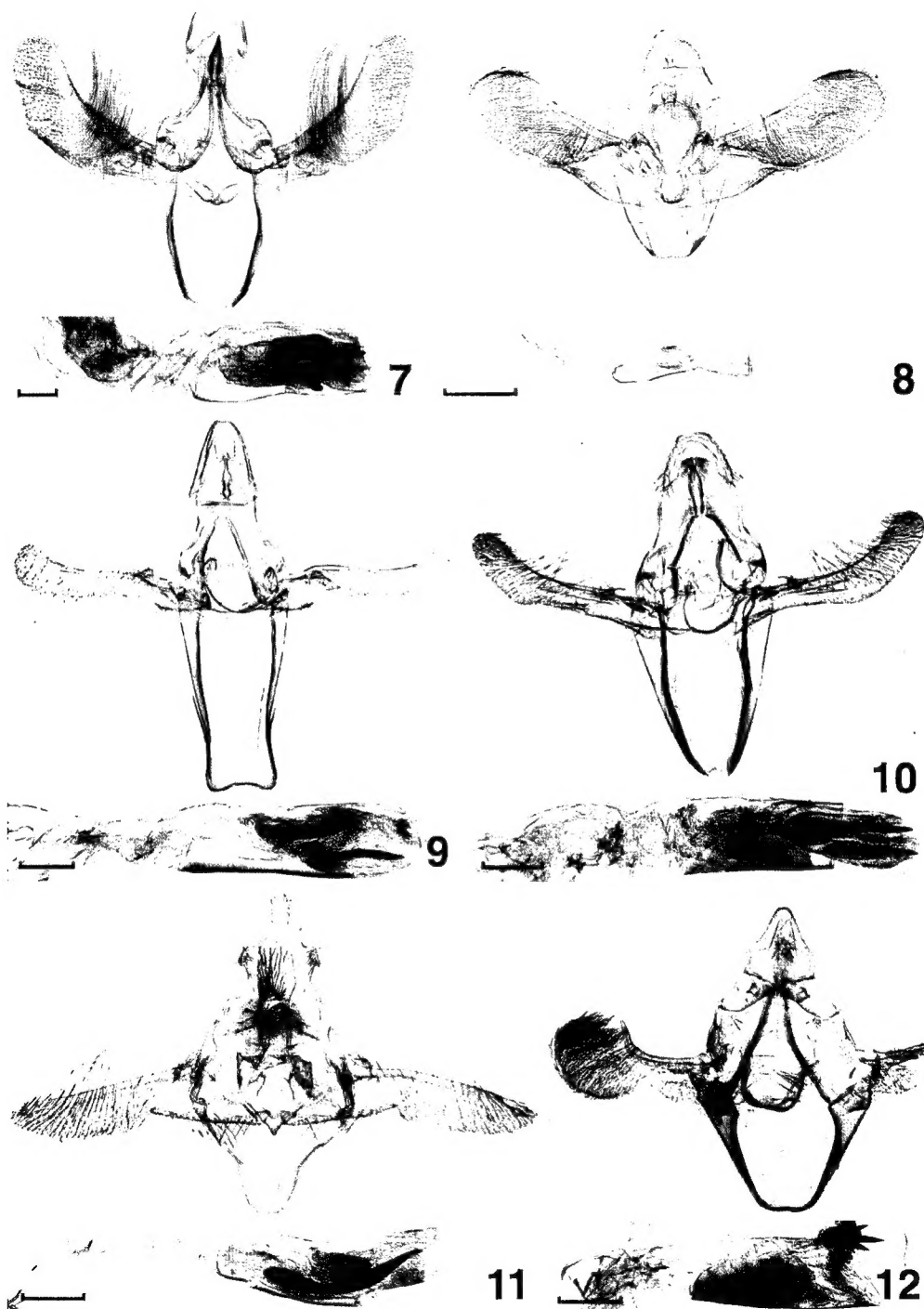
Diagnosis. Wingspan, 23–27 mm. This species is similar to *Nephopterix maenamii* Inoue, but differs from the latter by the median area with four dark grayish-brown spots.

Adults (Fig. 3). Antenna of male broadened at base of flagellum with large scales. Labial palpus strongly upturned, dark grayish brown; basal and median segment covered with pale grayish-white scales on inner surface. Ground color of forewing dark grayish brown, mostly covered with purplish-red scales in male; costa and distal areas suffused with whitish scales. Hindwing ochreous brown; basal half rather paler than distal half.

Male genitalia (Figs 9, 14). Uncus subtriangular, roundly protruded at apex, dorsally covered with moderate hairs; apical process of gnathos narrow, slightly hooked, pointed at apex, with developed arms; juxta semicircular, with small lateral arms. Valva rather narrow, rounded at apex; costa weakly sclerotized; harpe semiquadrate, with small hairs; sacculus narrow, weakly developed. Vinculum sclerotized, rectangularly developed, about as long as valva. Aedeagus large, about 1.5 times as long as valva; cornuti two, large, strong, different in size. Structure of 8th abdomen shown in fig. 14.

Female genitalia (Fig. 20). Apophysis anterioris rather long, about 1.2 times as long as apophysis posterioris. Ostium bursae simple, wide bowl-shaped. Ductus bursae broad, short, about same length of 7th abdominal sternite. Ductus seminalis membranous, basally broad, originating from posterior part of corpus bursae. Corpus bursae heavily sclerotized near junction of ductus bursae, with many short spines, and with many long spines in anterior part; signa two, large, with numerous strong thorns in signum plate.

Material examined. GW- 1 ♂, Soyang-dam, 3. VII. 1990 (K.T. Park), CIS; 1 ♂, Mt. Chiak, 5. VIII.



Figs 7-12. Phycitini spp., male genitalia, caudal view: 7. *Salebria vinacea* (Inoue); 8. *Apomyelois fasciatella* Inoue; 9. *Oligochroa bitinctella* (Wileman); 10. *O. bilineatella* (Inoue); 11. *Metriostola betulae* (Goeze); 12. *Psorosa decolorella* Yamanaka. (Scales: 0.5 mm)

1998(N.H. Ahn & Y.K. Kim), UIB, gen. sl. no. UIB-1905, 2 ♂, 1 ♀, same locality, 5. VIII. 1998(N.H. Ahn & Y.K. Kim), UIB, GG- 1 ♀, Mt. Hwaak, Gapyung-gun, 19. VIII. 1998(Bae, Lee & Kim), UIB, 2 ♂, same locality, 25. VIII. 1998(Bae, Lee & Ahn), UIB; 1 ♂, Is. Youngyu, Incheon-shi, 28. VIII. 1997(M.K. Paek & N.H. Ahn), UIB, gen. sl. no. UIB-1681; 1 ♀, Is. Daebu, Ansan-shi, 28. VI. 1997(M.K. Paek), UIB, gen. sl. no. UIB-1680, 1 ♀, same locality, 30. VIII. 1997(M.K. Paek), UIB, GB- 1 ♀, Mt. Seondal, Youngju-shi, 29. VI. 1998(Y.S. Bae & M.K. Paek), UIB.

Distribution. Korea (GW, GG, GB) and Japan.

Host plant. Unknown.

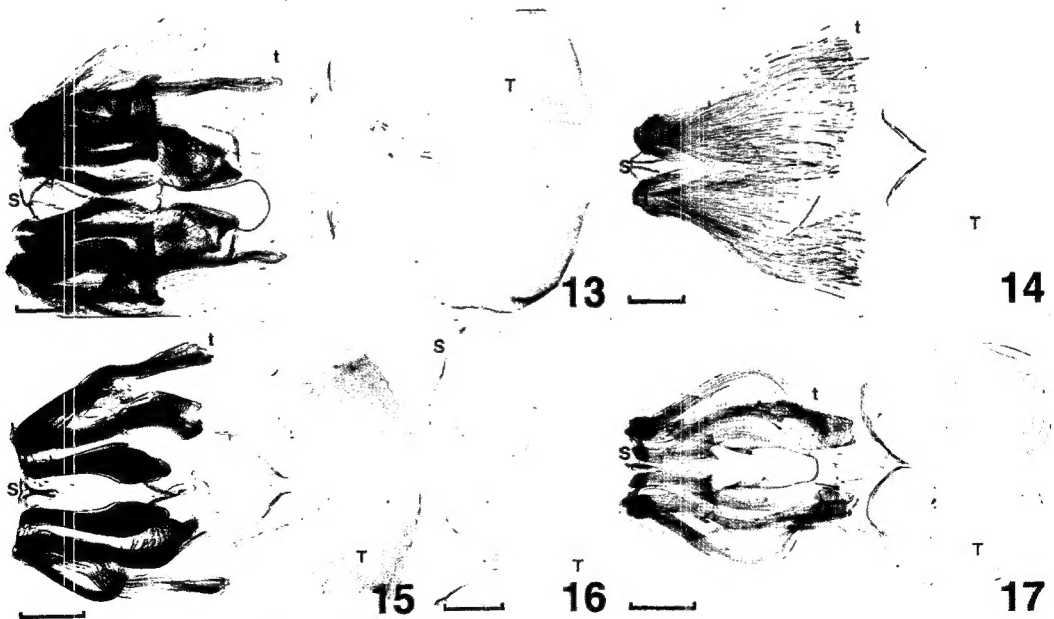
Remarks. This species was originally described based on the male from Japan by Wileman(1911). The female, hitherto unknown, is described and figured for the first time. Moths were collected from the late of June to the late of August. The genus *Oligochroa* Ragonot, 1888 (Type species: *Pempelia dionysia* Zeller, 1846) is known for the first time from Korea. The genus has following characters: Labial palpus stout upturned; median segment long, straight; apical segment minute; maxillary palpus aglet-shaped. Aedeagus variable, with cornuti or with none.

***Oligochroa bilineatella* (Inoue) 검은쌍줄알락명나방 (新稱)**

(Figs 4, 10, 15, 21)

Nephopteryx bilineatella Inoue, 1959, Tinea 5: 297, fig. 7. TL: Japan.

Oligochroa bilineatella: Inoue, 1982, 1: 395, 2: 251, pl. 47, fig. 55.



Figs 13-17. Phycitini spp., 8th abdominal tergites (T), sternites (s), and tufts (t): 13. *Salebria vinacea* (Inoue); 14. *Oligochroa bitinctella* (Wileman); 15. *O. bilineatella* (Inoue); 16. *Metriostola betulae* (Goeze); 17. *Psorosa decolorella* Yamanaka. (Scales: 0.5 mm)

Diagnosis. Wingspan, 23–26 mm. This species can be easily separated from the other species by the two black and blackish–gray antemedian lines incurved of forewing.

Adults (Fig. 4). Antenna of male dark gray, broadened at base of flagellum, with large scales. Labial palpus strongly upturned, covered with pale grayish–white scales on inner surface. Ground color of forewing light gray; basal area mixed with pale blackish and light gray scales; submarginal line black, strongly angled; marginal line with distinct several black dots. Hindwing ochreous brown; basal half rather paler than distal half.

Male genitalia (Figs 10, 15). Uncus semicircular, bluntly pointed at apex, dorsally covered with long hairs; apical process of gnathos arrowhead-shaped, slightly hooked, pointed at apex; juxta U-shaped, with slender lateral arms. Valva rather narrow, ventral margin slightly waved; costa weakly sclerotized; several harpes irregular short hairs at tips; sacculus narrow, weakly developed. Vinculum well sclerotized, almost of same length as valva one. Aedeagus large, about 1.5 times as long as valva; cornuti two, large, strong, different in size. Structure of 8th abdomen shown in fig 15.

Female genitalia (Fig. 21). Apophysis anterioris rather short, as long as apophysis posterioris. Ostium bursae narrow, well sclerotized. Ductus bursae long, sclerotized; colliculum long, with several longitudinal groove, broadened in posterior part. Ductus seminalis basally broad, membranous, originating from near swelled posterior part of corpus bursa. Corpus bursae heavily sclerotized about 1/3 posteriorly, consist of numerous small granular, and mostly covered with very short spines; signum rudimentary.

Material examined. GW– 1 ♂, Mt. Balgyo, Hweongsung-gun, 7. VII. 1998 (Paek, Lee, Kim & Song), UIB; 1 ♀, Mt. Jeombong, 13. VII. 1997 (Paek *et al.*), UIB, gen. sl. no. UIB-1674. GG– 1 ♂, 1 ♀, Mt. Hwaak, Gapyung-gun, 19. VIII. 1998 (Bae, Lee & Kim), UIB. CB– 1 ♂, Mt. Weolak, 7. V. 1999 (Bae *et al.*), UIB; 1 ♀, Mt. Ingyeong, 8. VI. 1997 (Bae *et al.*), UIB, gen. sl. no. UIB-1673. GB– 1 ♀, Mt. Sobaek, Youngpung-gun, 17. VII. 1998 (Paek, Lee, & Song), UIB, gen. sl. no. UIB-1906; 2 ♀, Mt. Sokri, 16. VII. 1998 (Paek, Ahn & Kim), UIB.

Distribution. Korea (GW, GG, CB, GB) and Japan.

Host plant. Unknown.

Remarks. This species was originally described based on a males from Japan by Inoue (1959). It was originally placed in the genus *Nephopteryx* Hübner, but it was transferred to the genus *Oligochroa* Ragonot by Inoue (1982). The female, hitherto unknown, is described and figured for the first time. Moths were collected from the early of May to the mid of August.

***Metriostola betulae* (Goeze) 회미무늬알락명나방 (新稱)**

(Figs 5, 11, 16, 22)

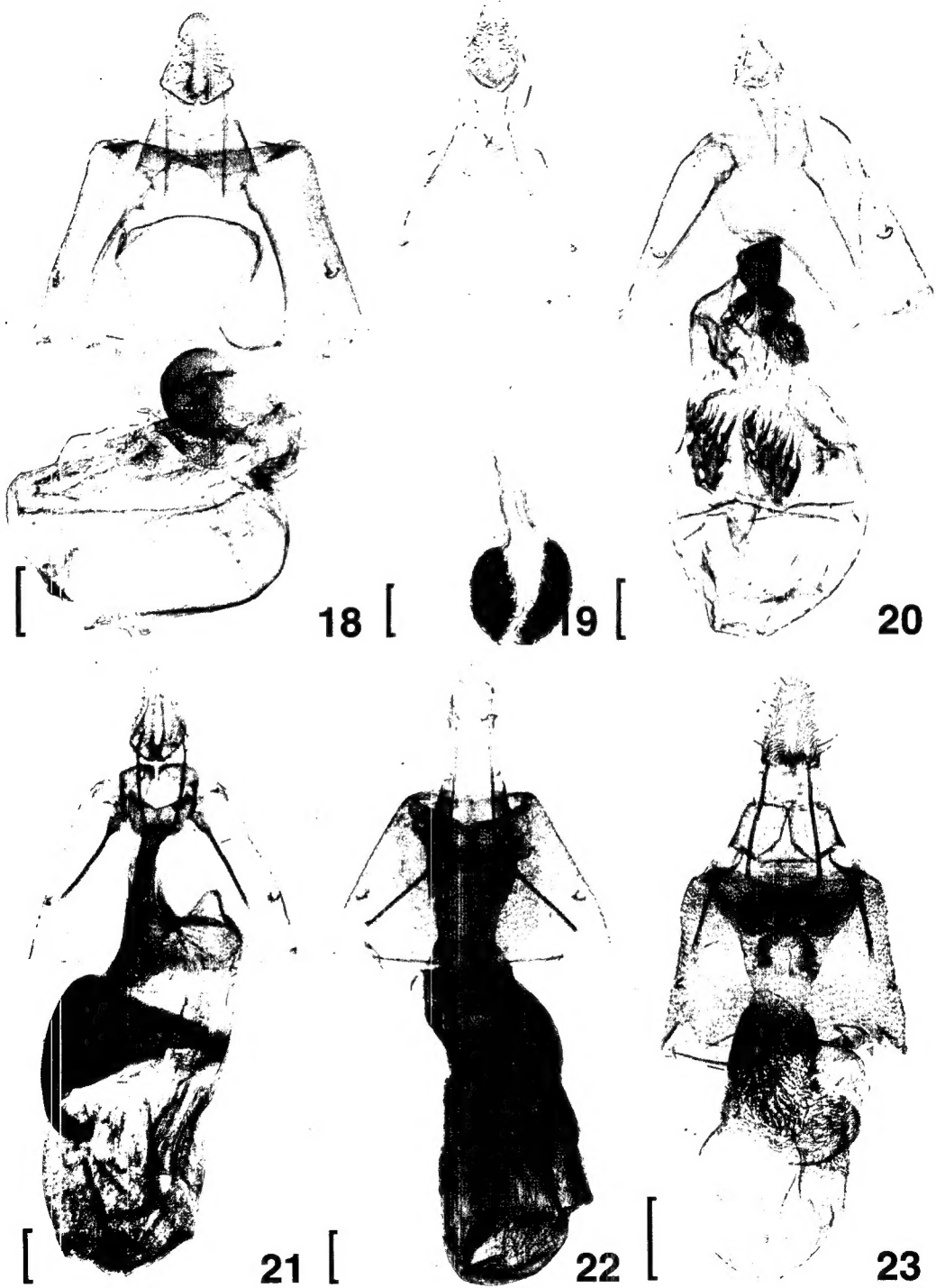
Phalaena betulae Goeze, 1778, in de Geer, Mém. 1(13): 25, pl. 28, figs 20–30. TL: Europe.

Pempelia betulae: Zeller, 1846: 780.

Nephopteryx [sic] *betulae*: Snellen, 1882, 2(1): 136.

Meroptera betulae: Ragonot, 1893, 7: 316.

Salebria betulae: Rebel, 1901, in Staudinger & Rebel, 2: 33; Rebel, 1910, in Spuler, 2: 210, pl. 82, fig. 28; Martini, 1916, 30: 115; Deurs, 1942, 48: 51, pl. 6, fig. 89; Beirne, 1952: 92, fig. 83, pl. 7,



Figs 18-23. Phycitini spp., female genitalia, ventral view: 18. *Salebria vinacea* (Inoue); 19. *Apomyelois fasciatella* Inoue; 20. *Oligochroa bitinctella* (Wileman); 21. *O. bilineatella* (Inoue); 22. *Metriostola betulae* (Goeze); 23. *Psorosa decolorella* Yamanaka. (Scales: 0.5 mm)

fig. 2.

Phycita betulae: Pierce & Metcalfe, 1938: 4, pl. 3.

Metriostola betulae: Hannemann, 1964, 50: 172, figs 105a-b, pl. 11, fig. 11; Palm, 1985, 52: 79; Palm, 1986, 3: 56, figs 19, 26, 47, 50, pl. 2, fig. 17; Goater, 1986: 105, pl. 7, fig. 24; Sinev, 1986, (114): 294, pl. 289, fig. 6, pl. 311, figs 9, 10, pl. 312, fig. 1; Sinev, 1986, 4(3): 296, fig. 311: 9, 10, fig. 312: 1; Yamanaka, 1994, 14(1): 34, figs 4, 11, 14, 20.

Phycis obtusella: Zincken, 1818, 3: 164.

Phycis holosericea: Fisher von Röslerstamm, [1842]: 149, pl. 57, figs 2a-d.

Diagnosis. Wingspan, 23-26 mm. This species is quite similar to *M. atratella* Yamanaka, and they are hardly separable each other by the external character. This species can be distinguished from *M. atratella* by the more distinct antemedian line, and by the shape of male genitalia as follows: uncus distinctly protruded; juxta V-shaped.

Adults (Fig. 5). Antenna fuscous, simple. Labial palpus strongly upturned, fuscous, mixed with greyish scales. Ground color of forewing fuscous; antemedian and submarginal lines grayish white, narrow; cilia grayish white at tip. Hindwing smoky gray, basal half rather paler than distal half.

Male genitalia (Figs 11, 16). Uncus posteriorly protruded, with lateral side lobes, and marginally covered with several hairs; apical process of gnathos horn-like, strong, pointed at apex; juxta V-shaped, with lateral arms, short hairs at tips. Valva rather narrow, slightly pointed at apex; costa well sclerotized with projection at apex; harpe nipple-like, with several short hairs; sacculus well developed. Vinculum short, about 0.7 times as long as valva, anteriorly very narrow. Aedeagus large, about 1.2 times as long as valva; cornutus large, strong, bented. Structure of 8th abdomen shown in fig 16.

Female genitalia (Fig. 22). Apophysis posterioris long, about 1.5 times as long as apophysis anterioris. Ostium bursae broad, simple rounded. Ductus bursae large, well sclerotized. Ductus seminalis membranous, originating from end of swelled posterior part of corpus bursae. Corpus bursae oblong, densely wrinkled; signum rudimentary.

Material examined. GW- 2 ♂, 1 ♀, Chuncheon-dam, 15. VI. 1992 (K.T. Park), CIS, gen. sl. no. UIB-1727 (♂), 1728 (♂), 1860 (♀); 1 ♂, 1 ♀, Mt. Bangtae, Injae-gun, 24. VI. 1996 (Y.M. Park & H.K. Lee), CIS, gen. sl. no. UIB-1980 (♂).

Distribution. Korea (GW), Japan, Europe, and Russia.

Host plant. Unknown.

Remarks. This species seems to be a rare species in Korea. Moths were collected from the mid to the late of June. The genus *Metriostola* Ragonot, 1893 (Type species: *Epischnia vacciniella* Zeller, 1846) is known for the first time from Korea. The genus is morphologically similar to *Epischnia* Hübner, [1825] 1816, but it can be distinguished by the following characters: labial palpus short, practically not projecting above vertex; apical segment less than about 1/4 times as long as median segment.

***Psorosa decolorella* Yamanaka 반검은알락명나방 (新稱)**

(Figs 6, 12, 17, 23)

Psorosa decolorella Yamanaka, 1986, Tyô to Ga 37(4): 185. TL: Japan.

Diagnosis. Wingspan, 17–20 mm. This species can be easily separated from other species by the following characters: basal area dark fuscous; antemedian line whitish gray, oblique, slight curved outwardly.

Adults (Fig. 6) Antenna of male dark fuscous, broadened at base of flagellum with large scales. Labial palpus acutely upturned, fuscous, mixed whitish scales at ventral base. Ground color of forewing dull fuscous gray; cilia gray. Hindwing ochreous brown; basal half rather paler than distal half.

Male genitalia (Figs 12, 17). Uncus triangulated, roundly protruded at apex, dorsally covered with rather long hairs; apical process of gnathos lemon-like, central process of gnathos circularly developed; juxta U-shaped, with slender lateral arms. Valva club-shaped, with noticeable projection at apex of costa; costa well sclerotized, strongly incurved; sacculus narrow, weakly developed. Vinculum well sclerotized, almost of same length as valva one. Aedeagus large, about 1.2 times as long as valva, armed with numerous stout thorns at posterior part; cornutus absent. Structure of 8th abdomen shown in fig 17.

Female genitalia (Fig. 23). Apophysis posterioris rather long, about 1.2 times as long as apophysis anterioris. Ostium bursae wide bowl-shaped, strongly scobinate, especially, strongly scobinated with middle area of ventral wall slightly swollen. Ductus bursae very short, membranous. Ductus seminalis membranous, originating from near swelled posterior part of corpus bursae. Corpus bursae oblong, densely covered with numerous short spine on posterior half; signum rudimentary.

Material examined. GG– 3 ♂, 2 ♀, Mt. Hwaak, Gapyung-gun, 19. VIII. 1998 (Bae, Lee & Kim), UIB, gen. sl. no. UIB-1911 (♀); 1 ♂, Mt. Soyo, 17. V. 1997 (Bae *et al.*), UIB, gen. sl. no. UIB-1650. CB– 1 ♂, Mt. Ingyeong, 8. VI. 1997 (Bae *et al.*), UIB, gen. sl. no. UIB-1774. GN– 1 ♀, Upo swamp, Changryeong-gun, 28. VII. 1997 (M.K. Paek), UIB, gen. sl. no. UIB-1642.

Distribution. Korea (GG, CB, GN) and Japan.

Host plant. Unknown.

Remarks. Moths were collected from the mid of May to the mid of August.

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韓國產 알락명나방族 (나비目, 명나방科, 알락명나방亞科)의 分類學的 研究 (IV)

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알락명나방族의 *Salebria vinacea* (Inoue) (큰알락명나방), *Apomyelois fasciatella* Inoue (붉은맥알락명나방), *Oligochroa bitinctella* (Wileman) (작은네점알락명나방), *O. bilineatella* (Inoue) (검은쌍줄알락명나방), *Metriostola betulae* (Goeze) (희미무늬알락명나방), *Psorosa decolorella* Yamanaka (반검은알락명나방) 6種을 韓國未記錄種으로 報告한다. 또한 4種, *S. vinacea* (Inoue), *A. fasciatella* Inoue, *O. bitinctella* (Wileman) 그리고 *O. bilineatella* (Inoue)의 암컷을 최초로 기재하였다. 그리고 이들에 대한 成蟲, 生殖器의 그림 및 寄主 植物의 기록을 整理하였다.

검색어 : 분류, 나비목, 명나방과, 알락명나방아과, 알락명나방족, 한국미기록

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